

Claims:

1. A computer system comprising at least one database correlating the presence of at least one mutation in a human immunodeficiency virus (HIV) reverse transcriptase and a change in susceptibility of at least one strain of HIV to a reverse transcriptase inhibitor, comprising at least one record corresponding to a correlation between at least one mutation 386A in said reverse transcriptase, and treatment with at least a reverse transcriptase inhibitor.
2. A method of evaluating the effectiveness of a reverse transcriptase inhibitor as an antiviral therapy for a patient infected with at least one mutant HIV strain comprising:
  - (i) collecting a sample from an HIV-infected patient;
  - (ii) determining whether the sample comprises a nucleic acid encoding HIV reverse transcriptase having at least one mutation 386A;
  - (iii) correlating the presence of said at least one mutation of step (ii) to a change in effectiveness of said reverse transcriptase inhibitor.
3. A method of identifying a drug effective against mutant HIV reverse transcriptase, comprising:
  - (i) providing a nucleic acid comprising HIV reverse transcriptase comprising at least one mutation 386A;
  - (ii) recombining said nucleic acid comprising HIV of step (i) into a proviral nucleic acid deleted for said sequence to generate a recombinant HIV virus;
  - (iii) determining a phenotypic response to said drug for said recombinant virus; and
  - (iv) identifying a drug effective against mutant HIV based on the phenotypic response of step (iii) .
4. A method of identifying a drug effective against mutant HIV reverse transcriptase, comprising:
  - (i) providing a HIV reverse transcriptase comprising at least one mutation 386A;
  - (ii) determining the activity of said drug on said HIV reverse transcriptase;
  - (iii) determining the activity of said drug on wild type HIV reverse transcriptase;
  - (iv) determining the ratio of the activity determined in step (iii) over the activity determined in step (ii);
  - (v) identifying an effective drug against mutant HIV based on the ratio of step (iv).
5. A method for evaluating a change in viral drug susceptibility, comprising:
  - (i) collecting a sample from an HIV-infected patient;

- (ii) determining whether the sample comprises a HIV reverse transcriptase having at least one mutation 386A;
- (iii) correlating the presence of said at least one mutation of step (ii) to a change in viral drug susceptibility.
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6. A method of evaluating a change in viral drug susceptibility, comprising:
- (i) providing an HIV comprising a reverse transcriptase containing at least one mutation 386A;
- (ii) determining a phenotypic response of said virus to said drug; and
- 10 (ii) correlating the phenotypic response of step (ii) to a change in viral drug susceptibility.
7. A method for evaluating a change in drug effectiveness against mutant HIV reverse transcriptase, comprising:
- 15 (i) providing a HIV reverse transcriptase comprising at least one mutation 386A;
- (ii) determining the activity of said drug on mutant reverse transcriptase;
- (iii) determining the activity of said drug on wild type HIV reverse transcriptase and;
- (iv) determining the ratio of the activity determined in step (iii) over the activity determined in step (ii);
- 20 (v) identifying an effective drug against mutant HIV based on the ratio of step (iv).
8. A vector for performing phenotypic analysis comprising an HIV sequence having at least one mutation 386A in the HIV reverse transcriptase gene.
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9. An isolated and purified HIV reverse transcriptase sequence having at least one mutation 386A, wherein said at least one mutation in said sequence correlates to a fold change in susceptibility towards a HIV reverse transcriptase inhibitor.
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10. An isolated and purified oligonucleotide comprising a HIV reverse transcriptase sequence of 5 to 100 bases for in vitro diagnosis of viral drug resistance, characterized in that said oligonucleotide comprises at least one mutation 386A.
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